

USSN 10/659,466

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Amdt. dated February 10, 2005

Reply to Office action of December 10, 2004

**REMARKS/ARGUMENTS**

This is in response to the Office action of December 10, 2004.

Applicant appreciates the courteousness of the Examiner in permitting the interview on January 21, 2005 wherein the tire inspection apparatus pertaining to the present invention was discussed and demonstrated with the Examiner. Due to size of the apparatus it was shown in a conference room in the Embassy Suite hotel approximately four blocks from the Patent Office. The equipment that was shown utilized the claimed invention. A photocopy of the equipment shown is attached. (Exhibit A) Also attached (Exhibit B) is a copy of the handout supplied to the Examiner pertaining to the nondestructive testing that was made of images of the same tire and the same portion of the tire for a film shearogram which is the prior art as well as a digital shearogram. Utilization of applicant's development, identified by the trademark DIFFEROGRAM, is depicted in the other three images. By manipulation of the image output, one is able to analyze the image as is shown in the far two right portions of the attached Exhibit B. The digital shearogram was not performed utilizing the equipment of the cited prior art, Lindsay et al, U.S. 6,791,695 but rather a digital shearogram technique from commercial equipment sold by SDS Systemtechnik GmbH, the description of which is attached as Exhibit C.

All of the claims have been rejected under 35 U.S.C. § 102 as anticipated by Lindsay et al, U.S. 6,791,695. This rejection is respectfully traversed. The Lindsay patent pertains to classic shearography testing techniques. See for example the Abstract and numerous segments in the application pertain to a shearography camera, column 4,

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lines 23 and 35 etc. Note that optical element 35 (Figure 1) collects the reflected light from object 25 causing an interference image to be created. This is a classic shearography technique. It should be noted that optical element 35 in Figure 1 is in front of lens 40 in the camera 45. The optical element splits the view the camera sees to produce the double image and allowing the camera to view the third dimension information. Accordingly, the images that are produced are based upon that double image which is not the captured image in applicant's invention.

In the shearography technique, as explained in the document forwarded to the Patent Office, entitled Digital Shearography, at page 31 there is an explanation as to how shearography operates. In other words, in order to get an appropriate image in that technique two separate points must be obtained as shown in Figure 2.1-2 for the reflected light from the object to be reviewed. Applicant on the other hand, to obtain the image of an anomaly of a tire, as is pointed out in claim 18, shows that the reflected light that is to create the image has the direct reflected light as opposed to light that is separated into separate interfering images. The interfering images creates the image as shown in Figure 1 of the present application which is the prior art. The image that can be obtained from applicant's invention is shown in Figure 5, when following the ASTM technique F 1364-92.

Applicant's claims indicate that the reflected light receiving apparatus for receiving the light reflected directly from the tire is the light that is utilized to prepare an image which a processor then compares. It is because the image that is obtained from the direct reflected light from the substrate that one generates the image shown in Figure 5.

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The specification indicates how the images from such light is processed and explained in particular in paragraph 0050 as well as 0059.

Applicant has inserted the word "direct" in claims 1, 8 and 18. Attached herewith is a copy of the definition of the word "direct" from a dictionary which indicates a wide variation of meanings for the word "direct." (Exhibit D)

For the foregoing reasons it is believed that this Amendment places the claims now appearing in this case in condition for allowance, and an early notice to such effect is respectfully solicited.

Applicant has submitted herewith a supplemental Information Disclosure Statement which includes U.S. 6,840,097 which issued January 11, 2005. It is believed that this is the US patent equivalent to the European translation previously submitted to the Patent Office as European Patent Application 1043578.

Another document relating to shearography likewise is included namely a brochure of Laser Technology Inc. of Norristown, PA dated September 1996 entitled AST 4000 Series Shearography Tire Inspection Systems. Multiple cameras are disclosed on page 1 of the specification and camera manipulation is disclosed on page 2.

In the event that the Examiner does not agree that the claims are now in condition for allowance, he is courteously invited to contact the undersigned at the number given below in order to discuss any changes which the Examiner believes would lead to an allowance of the claims.

It is not believed that any new fees are necessitated by the entry of this amendment. However in the event that any new fees or charges are required,

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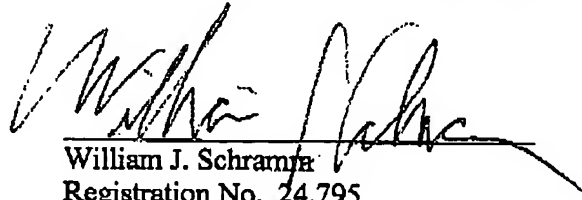
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authorization is hereby given to charge such fees to applicant's Deposit Account No 50-0852. A duplicate copy of this sheet is enclosed.

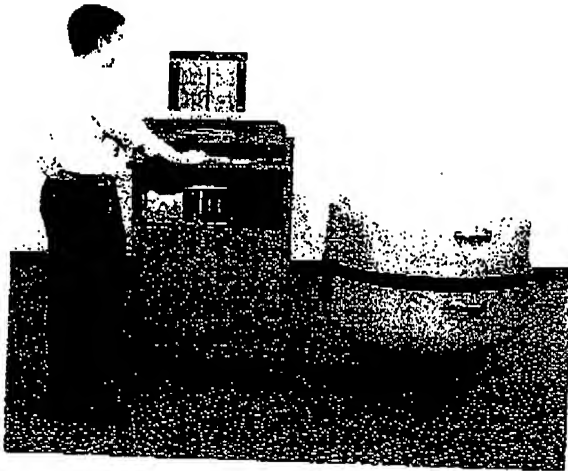
Respectfully submitted,

REISING, ETHINGTON, BARNES, KISSELLE, P.C.



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(248) 689-4071

Date: February 10, 2005



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EXHIBIT A

# DIFFEROMETRY

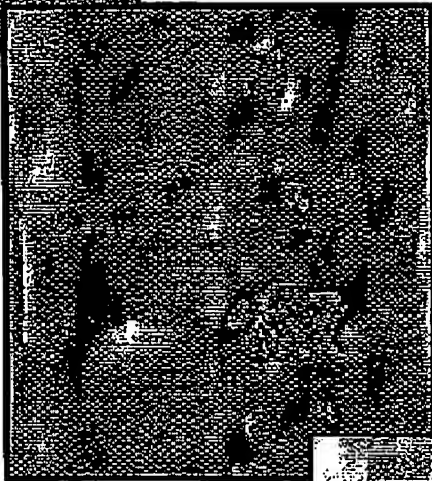
*THE FUTURE OF NON-DESTRUCTIVE TESTING*

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**Film**

**Shearogram**



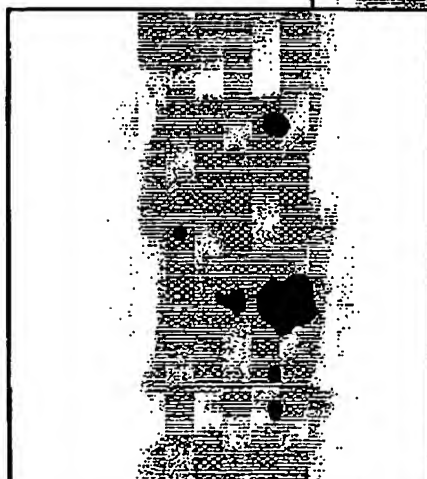
**Digital**

**Shearogram**



**Raw**

**Differogram™**



**Overlaid**

**Differogram™**

**L-RAY®**

[www.lray.com](http://www.lray.com)

**Analyzed**  
**Differogram™**

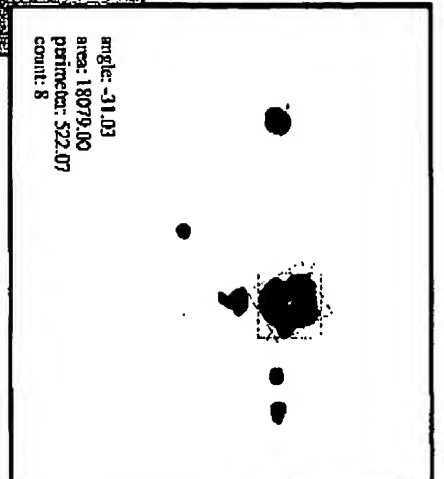


EXHIBIT B



## Communication Link

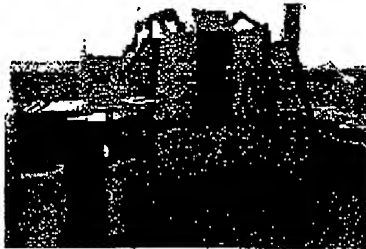
### Shearography SDS ITT - modern tire testing

*„Inspection of carcasses and the final products in the retreading industry by our test systems Interferometric Tire Tester is automated furthermore by the exchange of data via fa/r by PC-Soft . ... The integration of fa/r guarantees a secure and effective test procedure without an additional effort of the user.“*

Stefan Dengler, Managing Director SDS Systemtechnik GmbH, Calw

#### The challenge:

The organization of an automated data exchange between fa/r and the control system of the shearography machine ITT in order to avoid manual data input. This eliminates the relative risk of mistakes, reduces time and labor cost and it helps to complete the documentation of the production process.



**SDS**  
- Systemtechnik -  
GmbH

SDS: Interferometric Tire Tester

#### Description of function:

By integration of shearography into the process controlling fa/r, the operator is able to gain access even at this station to all the tire data that are stored in the data base so far.

After identification of the tire by its barcode, fa/r is sending automatically all the data required for an automatic definition of the test procedure by shearography system ITT.

After the testrun of the carcasses is finished, fa/r receives a rating code and data for the archiving (number of image data set and archiving medium) of the tested tire from the shearography machine. The data set of the tested tire is completed automatically in the background.

In case of downgrading the rating or scrap of a carcass, fa/r provides the functions required within a separate window.

Storage of test images on external media (DVD for example) with a tire number as well as amending the set of data with rating codes, is done by the shearography system. The rating codes are deposited within the master data of fa/r and can be maintained customer-specified. Via the fa/r function "Tire Search" the operator is able to gain very quick access to the test result of a specific test run.

Statistical evaluations referring to reasons of the scrap of carcasses can be amended very comfortable -besides the verbal description- by the test results of the specific test.

[www.pcsoft.de](http://www.pcsoft.de)

#### Highlights

- Integration of SDS-shearography into process management fa/r
- Automated data exchange between ITT and fa/r database instead of manual interaction, i.e. faster and free of mistakes
- Completion of documentation of production by means of image data and test results of shearography ITT
- Quick access to shearography images if required

#### Service

- Process analysis
- Complete installation
- User training
- Customizing
- Troubleshooting
- Hotline
- Remote support
- Updates
- Project coordination

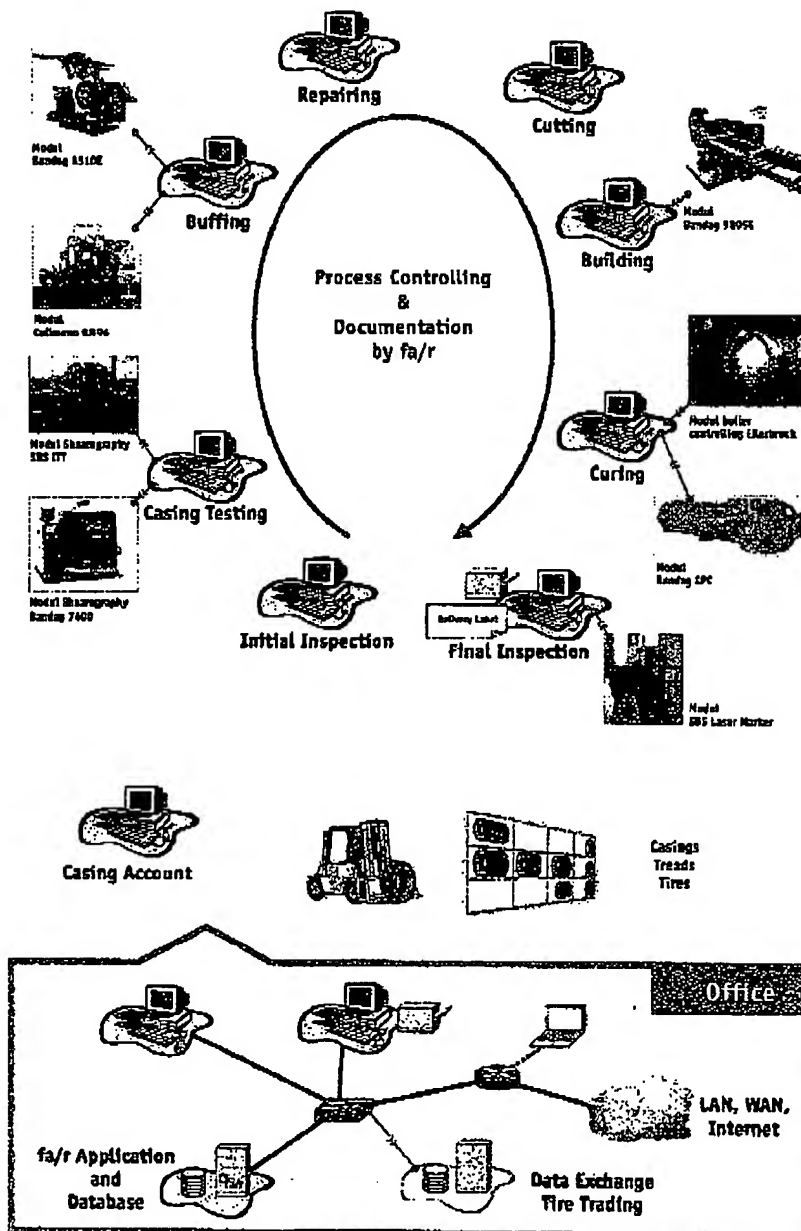
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EXHIBIT C

PC-Soft



### Shearography SDS Interferometric Tire Tester in fa/r process



#### Software structure:

- Main module with office and production environment
- Office licenses
- Production licenses
- Chaotic stock
- Casing account
- Statistics
- Complaints
- Report generator
- Communication links:
  - Buffer
  - Autoclave control
  - Shearography
  - Laser marker
  - Builder
- Software interfaces:
  - Tire trade
  - Financial accounting
  - Supply Chain

#### System Requirements

- SDS Shearography Interferometric Tire Tester
- fa/r V1.8 or higher with Communication link Shearography SDS
- Network connection within the fa/r production net
- Oracle database
- Server
  - MS Windows NT4.0,
  - MS Windows 2000, 2003
  - Citrix MetaFrame

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06.2004

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THE  
AMERICAN  
HERITAGE  
DICTIONARY  
OF THE  
ENGLISH LANGUAGE  
THIRD EDITION

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HOUGHTON MIFFLIN COMPANY  
*Boston • New York*

EXHIBIT     D

Words are included in this Dictionary on the basis of their usage. Words that are known to have current trademark registrations are shown with an initial capital and are also identified as trademarks. No investigation has been made of common-law trademark rights in any word, because such investigation is impracticable. The inclusion of any word in this Dictionary is not, however, an expression of the Publisher's opinion as to whether or not it is subject to proprietary rights. Indeed, no definition in this Dictionary is to be regarded as affecting the validity of any trademark.

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Houghton Mifflin Company gratefully acknowledges Mead Data Central, Inc., providers of the LEXIS®/NEXIS® services, for its assistance in the preparation of this edition of *The American Heritage Dictionary*.

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1. English language—Dictionaries.

PE1628.A623 1992  
423—dc20

92-851  
CIP

Manufactured in the United States of America

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## dipstick

527

## dirge

able, often periodic craving for alcoholic beverages. [Greek *dipsa*, thirst + *-mania*.] — *dip-so-ma-ni-as* (-&k') adj. & n. — *dip-so-ma-ni-a-cal* (-ma-ni-a-kal) adj.

**dip-stick** (dip/stik') n. A graduated rod for measuring the depth or amount of liquid in a container, as of oil in a crankcase.

**dip-ter-an** (dip/tar-an) also **dip-ter-on** (-ta-rön') — n. A dipterous insect. — adj. Of or belonging to the order Diptera; dipterous.

**dip-ter-ous** (dip/tar-əs) adj. 1. Of, relating to, or belonging to the Diptera, a large order of insects that includes the true flies and mosquitoes, characterized by a single pair of membranous wings and a pair of club-shaped balancing organs. 2. Having two wings, as certain insects, or winglike appendages, as certain fruits and seeds: the dipterous fruit of the maple. [From New Latin *Diptera*, order name, from Greek *dipteros*, having two wings; *di-*, two; see *di-* + *pteron*, wing; see *-ptera*.]

**dip-tych** (dip/tik) n. 1. An ancient writing tablet having two leaves hinged together. 2. A work consisting of two painted or carved panels that are hinged together. [Late Latin *diptycha*, from Greek *diptukha*, from neuter pl. of *diptrukhos*, folded double; *di-*, two; see *di-* + *ptukh-*, fold (from *ptussein*, *ptukh-*, to fold).]

**dip-tyl-d-a-mole** (di-ptir-i-da-möl', -pa-rid/a-) n. A drug,  $C_{12}H_{19}NO_6$ , that acts as a coronary vasodilator and is used, for example, in the long-term treatment of angina pectoris. [*m-* + *pyridine* + *-am* (nuc) + *-ole*.]

**di-quat** (di/kwät') n. A strong, nonpersistent, yellow, crystalline herbicide,  $C_{12}H_{19}BrN_2$ , used to control water weeds. [*di-* + *quat* (herbicide).]

**dir.** abbr. Director.

**Di-rac** (di-räk'), Paul Adrien Maurice. 1902–1984. British mathematician and physicist. He shared a 1933 Nobel Prize for new formulations of the atomic theory.

**dir-e** (dir) adj. **dir-er**, **dir-est**. 1. Warning of or having dreadful or terrible consequences; calamitous: a dire economic forecast; dire threats. 2. Urgent; desperate: in dire need; dire poverty. [Latin *dirus*, fearsome, terrible; akin to Greek *deinos*.] — **dir-ely** adv. — **dir-iness** n.

**di-rect** (di-rékt', di-) v. — **rect-ed**, — **rect-ing**, — **rects**. — **tr.** 1. To manage or conduct the affairs of; regulate. 2. To have or take charge of; control. 3. To give authoritative instructions to: directed the student to answer. 4. To cause to move toward a goal: aim. See Synonyms at aim. 5. To show or indicate the way for: directed us to the airport. 6. To cause to move in or follow a straight course: directed their fire at the target. 7. To indicate the intended recipient on (a letter, for example). 8. To address or adapt (remarks, for example) to a specific person, audience, or purpose. 9. a. To give guidance and instruction to (actors or musicians, for example) in the rehearsal and performance of a work. b. To supervise the performance of. — **intr.** 1. To give commands or directions. 2. To conduct a performance or rehearsal. — **direct** adj. 1. Proceeding without interruption in a straight course or line; not deviating or swerving: a direct route. 2. Straightforward and candid: frank: a direct response. 3. Having no intervening persons, conditions, or agencies; immediate: direct contact; direct sunlight. 4. Effected by action of the voters, rather than through elected representatives or delegates: direct elections. 5. Being of unbroken descent; lineal: a direct descendant of the monarch. 6. Consisting of the exact words of the writer or speaker: a direct quotation. 7. Lacking compromising or mitigating elements; absolute: direct opposites. 8. Mathematics. Varying in the same manner as another quantity, especially increasing if another quantity increases or decreasing if it decreases. 9. Astronomy. Designating west-to-east motion of a planet in the same direction as the sun's movement against the stars. — **direct** adv. Straight; directly. [Middle English *directen*, from Latin *dirigere*, *direct-*, to give direction to; *di-*, *dis-*, apart; see *dis-* + *regere*, to guide; see *reg-* in Appendix.]

**direct access storage device** n. Abbr. DASD Computer Science. A type of storage device, such as a magnetic disk, in which bits of data are stored at precise locations, enabling the computer to retrieve information directly without having to scan a series of records.

**direct action** n. The strategic use of immediately effective acts, such as strikes, demonstrations, or sabotage, to achieve a political or social end.

**di-rect-ac-tion** (di-rékt'ák/shan, di-) adj. Operating without intermediate ingredients, components, stages, or processes.

**direct current** n. Abbr. dc, DC An electric current flowing in one direction only.

**di-rect-ed an-gle** (di-rékt'éd, di-) n. Mathematics. An angle having an indicated positive sense.

**directed distance** n. Mathematics. A segment of a line having an indicated positive sense.

**di-rect-ion** (di-rékt'ashan, di-) n. 1. The act or function of directing. 2. Management, supervision, or guidance of an action or operation. 3. The art or action of musical or theatrical directing. 4. Music. A word or phrase in a score indicating how a passage is to be played or sung. 5. Often directions. An instruction or series of instructions for doing or finding something. 6. An authoritative indication: an order or a command. 7. a. The distance-independent relationship between two points in space that specifies the angular position of either with respect to the other; the relationship by which the alignment or orientation of any position

with respect to any other position is established. b. A position to which motion or another position is referred. c. A line leading to a place or point. d. The line or course along which a person or thing moves. 8. The statement in degrees of the angle measured between due north and a given line or course on a compass. 9. A course or area of development; a tendency toward a particular end or goal: charting a new direction for the company. [Middle English, arrangement, from Latin *directio*, *direction-*, from *dirigere*, past participle of *dirigere*, to direct. See *direct*.] — **di-rect-ion-less** adj.

**di-rect-ion-al** (di-rékt'sha-nal, di-) adj. 1. Of or indicating direction: an automobile's directional lights. 2. Electronics. Capable of receiving or sending signals in one direction only. 3. Relating to guidance in effort, behavior, or thought: directional training. 4. Serving to point the future direction, as of fashion: "A directional group of sweater knit colors are winter pastels" (Women's Wear Daily). — **directional** n. A directional signal. — **di-rect-ion-al-ity** (-sha-nál'i-té) n.

**directional antenna** n. An antenna that receives or sends signals most effectively in a particular direction.

**directional signal** n. One of two lights on the front and rear of an automotive vehicle that flash to indicate the direction of a turn. Also called *turn signal*.

**direction finder** n. A device for determining the source of a transmitted signal, consisting mainly of a radio receiver and a coiled rotating antenna.

**di-rect-ive** (di-rékt'iv, di-) n. An order or instruction, especially one issued by a central authority. — **directive** adj. Serving to direct, indicate, or guide.

**di-rect-ly** (di-rékt'li, di-) adv. 1. In a direct line or manner; straight: The road runs directly north. 2. Without anyone or anything intervening; directly responsible. 3. Exactly or totally: directly opposite. 4. At once; instantly: Leave directly. 5. Candidly; frankly: answered very directly. 6. Chiefly Southern U.S. In a little while; shortly: He'll be coming directly. — **directly** conj. Chiefly British. As soon as.

**direct mail** n. Advertising circulars or other printed matter sent directly through the mail to prospective customers or contributors. — **di-rect-mail** (di-rékt'mäl, di-) adj. — **direct mailer** n.

**direct object** n. Grammar. In English and some other languages, the word or phrase in a sentence referring to the person or thing receiving the action of a transitive verb. For example, in *mail the letter and call him*, *letter* and *him* are direct objects.

**di-rect-or** (di-rékt'ar, di-) n. Abbr. dir. 1. One that supervises, controls, or manages. 2. A member of a group of persons chosen to control or govern the affairs of an institution or a corporation. 3. A person who supervises the creative aspects of a dramatic production or film and instructs the actors and crew. 4. Music. The conductor of an orchestra or a chorus. 5. An electronic device that continually calculates and displays information used for firing weapons at moving targets, such as missiles or aircraft. — **di-rect-or-ship** n.

**di-rect-or-ate** (di-rékt'ar-it, di-) n. 1. The office or position of a director. 2. A board of directors, as of a corporation. 3. The entire staff of a bureau or department.

**di-rect-o-ri-al** (di-rékt'ar-i-əl, -i-er-, di-) adj. 1. Of or relating to a director or directorate. 2. Serving to direct; directive. — **di-rect-o-ri-al-ly** adv.

**di-rect-or's chair** (di-rékt'ar-z, di-) n. A light, folding armchair having a plastic, wooden, or metal frame and a back and seat usually made of canvas. [From its use by motion picture directors on the set.]

**di-rect-o-ry** (di-rékt'ar-ē, di-) n., pl. -ries. 1. A book containing an alphabetical or classified listing of names, addresses, and other data, such as telephone numbers, of specific persons, groups, or firms. 2. Computer Science. a. A listing of the files contained in a storage device, such as a magnetic disk. b. A description of the various characteristics of a file, such as the layout of the fields in it. 3. A book of rules or directions. 4. A group or body of directors. — **directory** adj. Serving to direct.

**direct primary** n. A preliminary election in which a party's candidates for public office are nominated by direct vote of the people.

**di-rect-rix** (di-rékt'brīks, di-) n., pl. di-rect-rix-es or di-rect-rix-es (di-rékt'ur'is). 1. Mathematics. The fixed curve traversed by a generatrix in generating a conic section or a cylinder. 2. The median line in the trajectory of fire of an artillery piece.

**direct tax** n. A tax, such as an income or a property tax, levied directly on the taxpayer.

**dire-ful** (dir'fúl) adj. 1. Inspiring dread; terrible. 2. Foreboding evil or disaster; ominous. — **dire-ful-ly** adv. — **dire-ful-ness** n.

**dire wolf** n. A large wolflike mammal (*Canis dirus*) that inhabited North America during the Pleistocene epoch.

**dirge** (dúrg) n. 1. Music. a. A funeral hymn or lament. b. A slow, mournful musical composition. 2. A mournful or elegiac poem or other literary work. 3. Roman Catholicism. The Office for the Dead. [Middle English, an antiphon at Matins in the Office for the Dead, from Medieval Latin *dirige Domine*, direct, O Lord (the opening words of the antiphon), imperative of *dirigere*, to direct. See *direct*.] — **dirge-ful** adj.

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a pat	oi boy
a pay	ou out
ar care	ou took
s father	ou boot
e pet	á cut
e be	ú urge
i pit	th thin
i pie	th this
tr pier	hw which
o pot	zh vision
o toe	s about, item
o paw	regionalism

Stress marks: ' (primary); ' (secondary), as in dictionary (dik'sh-nér-ē)